

1577

**CENTRAL FILES NUMBER**

45-1-199

FI

W. C. Johnson

Date 1/13/45

Those Eligible  
To Read the  
Attached

Subject **706-C Spills**

Copy

By C. D. Coryell

To **W. C. Johnson**

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Technical Information Officer  
ORNL Site

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ChemRisk Document No. 1577

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AKC 1-24-57  
Zistakes

## CLINTON LABORATORIES

DATE 1/13/45

1. W.C. Johnson
2. R.L. [redacted]
3. J.E. [redacted]
4. H.A. [redacted]
5. W.E. [redacted]
6. C.D. Coryell
7. Reading files
8. Central files

To W. C. Johnson

DEPARTMENT

FROM C. D. Coryell

DEPARTMENT

IN RE:

I should like to report to you my considerations about the six 706-C spills noted by Dr. J. E. Wirth in his letter of 1/9/45 to M. D. Whitaker.

First, all people involved in these spills are as distressed by the occurrences as the situation warrants. All were discovered immediately upon occurrence, none caused any ill effects to personnel either on occurrence or during the clean up period, the local Health-Physics representative was called immediately if he was not already in attendance upon the operations, and all were cleaned up to a safe level immediately. No single man is in my estimation guilty of gross negligence in these occurrences, and all involved, and many more, have expiated in scrubbing their minor negligence. Three safety meetings were held during this period for all the personnel involved on the Ba job, and the group is quite safety conscious, although much improvement is still to be achieved with respect to housekeeping and internal administration.

Secondly, it should be obvious to anyone interested in the 706-C building that it is terribly overcrowded for work of high urgency, that work is being done in this building at a level 30-fold in excess of design with respect to curies of hard gamma emitter and mass of uranium, and that the building, as the first of its kind in the United Nations, has certain drawbacks with respect to protection that was not foreseen by the Chemistry Division, Health Division, or the Scientific Management of this project.

I shall briefly review the six incidents mentioned by Dr. Wirth:

- (1) Wash water leaked from the flue during the flushing operations of Bank II (12/4/44). The flue was not properly designed. The activity level made experimentation and clean-up necessary. The water leak was not unexpected and was immediately cleaned up. The leakage was not due to negligence and is technically not a spill.
- (2) Hot ether leak from broken stop cock external to Cell 2 of Bank I (12/5/45). This is an apparatus failure which will be discussed by W. E. Cohn, since it happened in his field of operations.
- (3) Spill in Cell 2, Bank I which leaked to floor (12/13/44). This mishap occurred during clean up of partly dismantled apparatus, and will be discussed by W. E. Cohn.
- (4) Leakage of wash water from Cell 4, Bank II (12/13/44). The clean up of Cell 4 was absolutely necessary. A dam of putty was placed in the tunnel to the doorway. In spite of this, some slightly active solution leaked out under the door and was immediately cleaned up. Simultaneously more wash water travelled along a tygon line through the wall and dripped down from the external filter shield. This was also cleaned up immediately. Both of these occurrences are analogous to incident (1) and are not spills due to negligence. Neither caused excessive difficulty

or any unanticipated hazards.

- (5) The spraying of hot UNH from the waste storage tank through the panel upon apparatus and the passageway (12/26/44). This accident is the most serious of any I know of in 706-C. It occurred because of lack of complete familiarity of a man with an extremely complicated system of steam jets, valves, drains, and lines connected with the Ba storage tank part of which were installed for protective reasons after the tank had been used so that all could not be tested. One man carried out what he and many others thought was a standard operation, and one man watched for trouble and discovered it immediately. Steps are being taken to analyze and publicize all the complications and dangers inherent in this set-up. Clean-up operations were instituted immediately for the walls, floor, and hand-counter. I think that Health-Physics has been slow in reestablishing the use of the latter important instrument.
- (6) Back flow of active UNH through the funnel north of the building (12/31/44). This incident is not a repetition of a previous one; it is, on the contrary, the result of trying to arrange a better valve arrangement. A paper analysis indicates a security which does not in fact remain when solution is surging. The spill resulting was cleaned up instantly and suitable precautions have been taken to prevent this type of accident and to provide adequate drainage of the area effected.

I am perturbed about the implications in Dr. Wirth's letter with respect to his philosophy about research operations. I feel that circumstances leading to mishaps should be eliminated rigorously. In spite of this, however, mishaps will occur and machinery for handling them must also be ready and effective. Furthermore I feel that the best security we have had or have in the 706-C building, or will have in any similar research institution, is the principle of identification of individual responsibility with group responsibility coupled with maximum knowledge and maximum external safeguards. Good morale is a very important part of this, as is also the ability to take criticism and use it to improve circumstances.

~~SECRET~~